CLAIMS

What is claimed is:

1. A light emitting diode (LED) module, illuminating under application of an electrical current for use in an electrical device as a light source, the LED module comprising:

a heat dissipating substrate, having plural electrode sets, each of the electrode sets including an p-type electrode and an n-type electrode, the p-type electrodes electrically connecting to one another and extending to a first edge of the substrate to reach a p-type junction, the n-type electrodes connecting to one another and extending to a second edge of the substrate to reach an n-type junction; and

a plurality of epitaxy chips, each having an upper illuminating surface, each of the electrode sets being attached to a lower surface of each of the epitaxy chips, the epitaxy chips electrically connecting to one another via the electrode sets to form a LED module which illuminates with a large illuminating area.

2. The LED module of claim 1, wherein the material for the heat dissipating substrate is selected from the group consisting of ceramic, aluminum oxides, and aluminum nitrides.

3. The LED module of claim 1, wherein the p-type electrodes connect to one another in series, in parallel, or both in series and parallel.

4. The LED module of claim 1, wherein the electrode sets are respectively attached to the epitaxy chips according to a rectangular or circular distribution.

5. The LED module of claim 1, wherein the attachment of the epitaxy chips to the electrode sets are achieved by either cutting an epitaxy wafer into a plurality of epitaxy chips, and then placing the individual epitaxy chips on the electrode sets, or by placing an epitaxy wafer on the electrode sets and then cutting the epitaxy wafer into a plurality of epitaxy chips.

6. The LED module of claim 1, wherein the epitaxy chips are formed of one of two different materials, and are mounted on the electrode sets to generate lights of different wavelengths under application of an electrical current.

7. A light emitting diode (LED) module, illuminating under application of an electrical current for use in an electrical device as a light source, the LED module comprising:

a heat dissipating substrate, having plural electrode sets, each of the electrode sets including an p-type electrode and an n-type electrode, the p-type electrodes electrically connecting to one another and extending to a first edge of the substrate to reach a p-type junction, the n-type electrodes connecting to one another and extending to a second edge of the substrate to reach an n-type junction; and

a plurality of epitaxy chips, each having an upper illuminating surface provided with a light hybrid layer thereon, each of the electrode sets being attached to a lower surface of each of the epitaxy chips, the epitaxy chips electrically connecting to one another via the electrode sets to form a LED module, the upper illuminating surface emitting a light of a first wavelength to excite the light hybrid layer and generate a light of a second wavelength, the light of the first wavelength being mixed with the light of the second wavelength to form a hybrid light.

8. The LED module of claim 7, wherein the material for the heat dissipating substrate is selected from the group consisting of ceramic, aluminum oxides and aluminum nitrides.

9. The LED module of claim 7, wherein the p-type electrodes connect to one another in series, in parallel, or both in series and parallel.

10. The LED module of claim 7, wherein the electrode sets are respectively attached to the epitaxy chips according to a rectangular or circular distribution.

11. The LED module of claim 7, wherein the attachment of the epitaxy chips to the electrode sets are achieved by either cutting an epitaxy wafer into a plurality of epitaxy

chips and then placing individual epitaxy chips on the electrode sets, or by placing an epitaxy wafer on the electrode sets and then cutting the epitaxy wafer into a plurality of epitaxy chips.

12. The LED module of claim 7, wherein the light hybrid layer is formed of diffraction particles, fluorescent particles or scattering particles.

13. The LED module of claim 7, wherein the material for the diffraction particles is selected from the group consisting of quartz, glass and transparent polymer.

14. The LED module of claim 7, wherein the scattering particles are formed of a material selected from a group consisting of titanium barium oxide, titanium oxide, silicon oxide, silicon dioxide, barium sulfate and calcium carbonate.

15. A light emitting diode (LED) module, illuminating under application of an electrical current for use in an electrical device as a light source, the LED module comprising:

a heat dissipating substrate, having plural electrode sets, each of the electrode sets including an p-type electrode and an n-type electrode, the p-type electrodes electrically connecting to one another and extending to a first edge of the substrate to reach a p-type junction, the n-type electrodes connecting to one another and extending to a second edge of the substrate to reach an n-type junction; and

a plurality of epitaxy chips, each having an upper illuminating surface provided with a fluorescent layer thereon, each of the electrode sets being attached to a lower surface of each of the epitaxy chips, the epitaxy chips electrically connecting to one another via the electrode sets to form a LED module, the upper illuminating surface emitting a light of a first wavelength to excite the fluorescent layer and generate a light of a second wavelength, the light of the first wavelength being mixed with the light of the second wavelength to form a white light.

16. The LED module of claim 15, wherein the material for the heat dissipating substrate is selected from the group consisting of ceramic, aluminum oxides and aluminum nitrides.

17. The LED module of claim 15, wherein the p-type electrodes connect to one another in series, in parallel, or both in series and parallel.

18. The LED module of claim 15, wherein the electrode sets are respectively attached to the epitaxy chips according to a rectangular or circular distribution.

19. The LED module of claim 15, wherein the attachment of the epitaxy chips to the electrode sets are achieved by either cutting an epitaxy wafer into a plurality of epitaxy chips and then placing individual epitaxy chips on the electrode sets, or by placing an epitaxy wafer on the electrode sets and then cutting the epitaxy wafer into a plurality of epitaxy chips.

20. The LED module of claim 15, wherein the fluorescent layer is formed of yttrium aluminum garnet (YAG).